Heat Injury Risk Factors and Controls

By Lt.Cmdr. Diane Gilliland, EMU-10
Lt. Kevin Bailey, Surgeon Cell

As summer approaches and prevailing winds shift, the thermometer will continue to rise. We must all become experts on ***individual risk factors and control measures*** to prevent heat injuries in ourselves and our team.

The Enemy-HEAT

The body generates heat through muscle activity, direct sunlight, and heat transfer from the air. The body loses heat by the evaporation of sweat, transfer of heat to air, heat radiating from the body, and urination. High humidity prevents the evaporation of sweat preventing heat loss. When heat production exceeds heat loss, then body temperature will rise significantly, and even sweating will not help.

The average heat index in July and August in Djibouti will be 118F.
The maximum heat index recorded in 2003 was 147F.

Individual Risk Factors

There are many risk factors that contribute or make one more susceptible to heat injury, including:

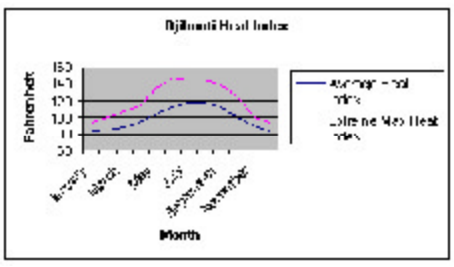
1) Illnesses that cause a fever, cold symptoms, sore throat, nausea, vomiting, or diarrhea
2) Many medications including those purchases at the exchange and those prescribed at the clinic
3) MANY nutritional supplements will cause your body to generate more heat or dehydration increasing your risk of heat injury
4) Skin disorders that prevent sweating (especially sunburns!)
5) Prior history of heat illness
6) Lack of acclimatization for 10-14 days
7) Age > 40
8) Poor fitness level
9) Overweight
10) Alcohol or caffeine use. They make your urine look clear even though they are dehydrating.
11) Consecutive days of increased heat exposure and exertion levels increasing your risk of dehydration

Individual Control Measures

Everyone should take care of himself/herself and keep a close eye on your buddy. There are several things that you can do to significantly reduce your risk of heat injury. They include drinking plenty of water (but not more than 3 bottles of water per hour), avoiding nutritional supplements, eating all meals (because replacing the salts of your body is VERY important), notifying your chain of command if you've been a heat casualty before, and comparing your urine to the urine color chart in the head/latrine.

Leader Control Measures

As leaders of Sailors, Soldiers, Airmen, or Marines, it is our responsibility to institute control measures that significantly reduce the risk of heat injury in our team. Recommended control measures include knowing the Wet Bulb Globe Temperature (WBGT) flag conditions, rotating personnel that are continuously exposed to the heat, monitoring and enforcing the hydration standard (don't exceed 1 ½ quarts per hour or 12 quarts per day), ensuring all meals are eaten, and using the fluid replacement and work/rest guide shown below.



By knowing our ourselves, our troops, the risk factors, and control measures, we can all take steps now to ensure a safe deployment.

Easy Work	Moderate Work	Hard Work
- Weapon Maintenance - Walking Hard Surface at 2.5 mph, <30 lb Load - Marksmanship Training - Drill and Ceremony	- Walking Loose Sand at 2.5 mph, No Load - Walking Hard Surface at 3.5 mph, <40 lb Load - Calisthenics - Patrolling - Individual Movement Techniques (low crawl, high crawl	- Walking hard Surface at 3.5 mph, 40 obs or more - Walking Loose Sand at 2.5 mph with Load - Field Assaults

- The work rest times and fluid replacement volumes will sustain performance and hydration for at least 4 hours of work in the specified heat category. Fluid needs can vary based on individual differences (+/- 1/4 qt/hr) and exposure to full sun or full shade (+/- 1/4 qt/hr).

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If wearing body armor add 5F to WBGT in humid climates

If wearing NBC clothing (MOPP4) add 10F to WBGT

NL = no limit to work time per hour

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TRAP *from Page 3*

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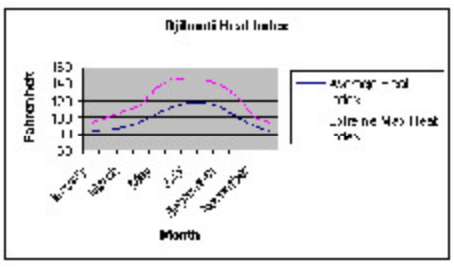

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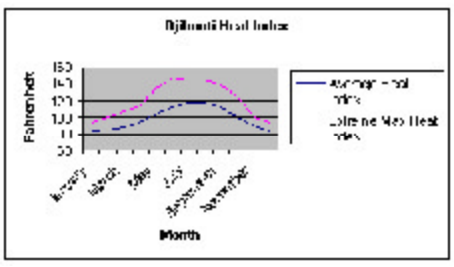

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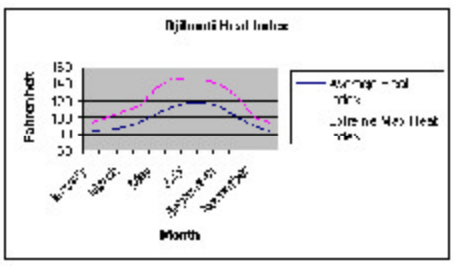

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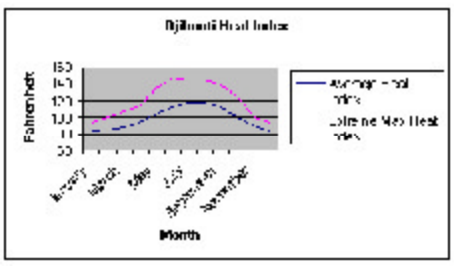

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5	>90	50/10 min	1	20/40 min	1	10/50 min	1

TRAP *from Page 3*

With night vision goggles fixed, the soldiers made their way through the sand storm created by the whirling blades of the helicopter's propellers. Once far enough away, the helicopter quickly lifts to provide air security for the ground troops.

"Our main goal is to get in and get out as quickly as possible," said Ceja.

As the constant radio communication between the units keeps them informed of enemy personnel positions, the soldiers advance toward an infrared signal beacon to the wounded. Once perimeter security is established, the available they must stabilize the victim and safely make it back to the landing zone.

"My job was to help provide security for the platoon," said Army Pfc. Gabriel J. Aubuchon, a rifleman with Bravo Company. "I had to have my head on a 360 degree swivel."

The soldiers, who had previously performed a TRAP mission during the day, now had the challenges that night brings. Many learned quickly that working at night was much more difficult.

"This was my first [TRAP] mission using night-vision goggles," said Aubuchon, a Doe Run, Mo., native. "There's a lot more moving parts, and you have to be more aware of your surroundings."

Besides the difficulties nightfall brings, the two units had to overcome communication difficulties brought on by being from different services. The two units had to rely on each other for support from the beginning to make the training a success.

"We've done six TRAP training missions and we've consistently gotten better each time we go out," said Braman. "The Old Guard hit the ground running when they got here and I respect that."

With half a dozen missions completed and more on the way, the Marines and soldiers prepare to step up their training a notch. First to perform the training during the day, then at night, and in the near future, a TRAP exercise using live ammunition.

"This is some of the best training I've ever done," said Aubuchon. "I never thought I'd be doing training like this."